IN THE SPECIFICATION

The paragraph beginning at page 4, line 11 has been amended as follows:

In accordance with the invention, frequency-independent signal portions are determined in the response signals, obtained by measuring the fluorescence light, and these frequency-independent signal portions are further-processed into input values for localization. The tissue section is modeled and a set of ~~guide~~ lead fields is determined from the model. The ~~guide field~~ lead fields are transformed, and the transformed ~~guide~~ lead fields are compared with the input values processed from the frequency-independent signal portions. A location of the transformed ~~guide~~ lead fields that best reproduces the frequency-independent signal portions is emitted, as an output, as a location of the region to be localized.

The paragraph beginning at page 5, line 1 has been amended as follows:

It is advisable to first normalize and then transform the ~~guide~~ lead fields, whereby the guide fields can be transformed into orthogonal ~~guide~~ lead fields. Furthermore, the orthogonal guide fields can be determined from the guide fields by singular-value decomposition.

The paragraph beginning at page 7, line 12 has been amended as follows:

The photo sensors and laser diodes of the applicator 3 are connected via electrical connection lines 4 with ~~an electrical~~ a control device [[4]] 5, and with a measurement value processor 7 via electrical connection lines 6.

The paragraph beginning at page 7, line 21 has been amended as follows:

The measurement value processor 7 includes, for example, measurement amplifiers, filters and A/D converters. The measurement value processor 7 is connected with one or more data inputs of an electronic computer 8. In addition to

the measurement values, a model 9 of the tissue section 1 is available to the computer, with which the above-cited fluorescing areas 2 are localized and identified, as is specified further below. The result, for example in the form of a graphical representation of the anatomy of the tissue section wherein the location 26 of the light sources (and thus of the spatial areas 2) is marked, ensues via a monitor 10. Since the calculation, among other things, is determined by the model 9 and the location of the exposure, a supervisory input and control 11 is provided with which the number and the location of the photo sensors are determined, as well as the number and location of the laser diodes, the value of the frequency, and the model.

The paragraph beginning at page 8, line 11 has been amended as follows:

The input dimensions for the localization method are, per measurement surface,

a) An *MxN* data matrix *D* with measurement values (reference number 21) which are dependent on the *M* sensor locations $\vec{r}_{S,m},(m=1,...,M)$ and the *N* excitation parameters (N_1 excitation locations $\vec{r}_{A,n_1},(n_1=1,...,N_1)$ and/or N_2 excitation modulation frequencies $f_{n_2},(n_2=1,...,N_2)$, whereby $N=N_1+N_2$), and which can result from the actual measurement data by post-processing.

The *M*-dimensional column vectors of the data matrix can be reformatted corresponding to the arrangement of the sensors on the measurement surface. A graphical representation of the reformed column vector provides a visualization of the measurement value distribution over the considered measurement surface for a given excitation type. In the case of the above-cited 8x8 sensor distribution, the 64-dimensional column vector is reformed into an 8x8 matrix.

b) A set of *K* ~~guide~~ leads fields or lead fields $L_k(\vec{r}_m, \vec{n}_m, \vec{r}_i, \mu_a, \mu_s), (k = 1,...,K)$, for example multipole lead fields which are characterized with the reference number 22 in Figure 3, and which for their part are dependent

- the model of the optical medium of the ~~examination area~~ tissue section 1,
- the measurement system, for example location $\vec{r}_m$ and/or normal vector $\vec{n}_m$ of the *m*-th sensor,
- the location $\vec{r}_f$ of the *f*-th excitable fluorochrome,
- the type of the measurement (frequency modulation yes/no) and
- optical parameters such as the absorption and scatter coefficients μ_a, μ_s of the medium surrounding the lesion(s).

The paragraph beginning at page 10, line 1 has been amended as follows:

~~Guide~~ Lead fields~~, known as lead fields,~~ are known quantities from bioelectric magnetism. They describe the measurement value distribution of a standard signal source that can be acquired with a given measurement system.